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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/905,131	07/13/2001	Yoshiharu Doi	NAK1-BP43	3858

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EXAMINER	
PEREZ, ANGELICA	
ART UNIT	**PAPER NUMBER**
2684	

DATE MAILED: 06/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/905,131	DOI, YOSHIHARU	
	Examiner	Art Unit	
	Perez M. Angelica	2684	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 December 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-8 and 13-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akaiwa (Akaiwa et al.; US Patent No.: 5,710,995) in view of Kirisawa (Kirisawa, Akihiro; US Patent No.: 6,297,780 B1).

Regarding claims 1 and 5, Akaiwa teaches of a mobile communication terminal and method (column 1, lines 42-64; e.g., steps describe a method of the invention) for performing reception and transmission (figure 1) using an adaptive array method (column 4, lines 66-67 and column 5, lines 1-2), the mobile communication terminal being provided with (a) a plurality of antennas (figure 1, items 11 and 12 and column 4, lines 9-12), (b) reception means for forming a directivity pattern for receiving a desired reception signal from a base station and receiving the reception signal from the base station using the formed directivity pattern (column 1, lines 50-64), the mobile communication method comprising: detection mean for detecting a reception error in the reception signal (figure 1, items 15 and 16; columns 1, 3 and 4, lines 43-63, 56-63 and 5-13, respectively).

Akaiwa does not specifically teach of transmission means for transmitting a transmission signal using the directivity pattern formed in reception; and transmission control means for controlling the transmission means when the detection means detects the reception error so that a pattern different from the directivity pattern formed in reception is formed and the transmission signal is transmitted in the formed pattern.

In related art concerning a mobile apparatus with plurality of antennas having different directivities, Kirisawa teaches of transmission means for transmitting a transmission signal using the directivity pattern formed in reception (column 1, lines 51-62); and transmission control means for controlling the transmission means when the detection means detects the reception error so that a pattern different from the directivity pattern formed in reception is formed and the transmission signal is transmitted in the formed pattern instead of the directivity pattern formed in reception (column 1, lines 60-62; where the transmitted signal is different from the received pattern. See also, columns 2 and 3, lines 39-67 and 1-5, 47-64; where transmission directionality patterns of the antennas is selected depending on the reflected received signal and signal quality).

It would have been obvious to a one of ordinary skill in the art at the time the invention was made to combine Akaiwa's mobile communication terminal for performing reception using an adaptive array method with Kirisawa's transmission control means in order to increase the likelihood of the transmitted signal to reach its destination, as taught by Kirisawa.

Regarding claims 13 and 17, Akaiwa teaches of a mobile communication terminal and method (column 1, lines 42-64; e.g., steps describe a method of the invention) for performing reception and transmission (figure 1) using an adaptive array method (column 4, lines 66-67 and column 5, lines 1-2), the mobile communication terminal being provided with a plurality of antennas (figure 1, items 11 and 12 and column 4, lines 9-12), a reception circuit which multiplies a signal received using each of the plurality of antennas by a weight vector (column 1, lines 50-55), and a transmission circuit which transmits the multiplied signal using each of the plurality of antennas (column 3, lines 48-53, where it uses each of the antennas at different times depending on the selection made), reception means for forming a directivity pattern for receiving a desired reception signal from a base station and receiving the reception signal from the base station using the formed directivity pattern (column 1, lines 50-64), the mobile communication method comprising: detection mean for detecting a reception error in the reception signal (figure 1, items 15 and 16; columns 1, 3 and 4, lines 43-63, 56-63 and 5-13, respectively).

Akaiwa does not specifically teach of transmission means for transmitting a transmission signal using the directivity pattern formed in reception; and transmission control means for controlling the transmission means when the detection means detects the reception error so that a pattern different from the directivity pattern formed in reception is formed and the transmission signal is transmitted in the formed pattern.

In related art concerning a mobile apparatus with plurality of antennas having different directivities, Kirisawa teaches of transmission means for transmitting a

transmission signal using the directivity pattern formed in reception (column 1, lines 51-62); and transmission control means for controlling the transmission means when the detection means detects the reception error so that a pattern different from the directivity pattern formed in reception is formed and the transmission signal is transmitted in the formed pattern instead of the directivity pattern formed in reception (column 1, lines 60-62; where the transmitted signal is different from the received pattern. See also, columns 2 and 3, lines 39-67 and 1-5, 47-64; where transmission directionality patterns of the antennas is selected depending on the reflected received signal and signal quality).

It would have been obvious to a one of ordinary skill in the art at the time the invention was made to combine Akaiwa's mobile communication terminal for performing reception using an adaptive array method with Kirisawa's transmission control means in order to increase the likelihood of the transmitted signal to reach its destination, as taught by Kirisawa.

Regarding claims 2, 6, 14 and 18, Akaiwa in view of Kirisawa teaches all the limitations according to claims 1, 5, 13 and 17, respectively. In addition, Akaiwa teaches where when the detection means detects the reception error (figure 1, items 15 and 16; columns 3 and 4, lines 56-63 and 5-13, respectively). Kirisawa further teaches where the transmission control means controls the transmission means so that the non-directional pattern is formed using one of the plurality of antennas (column 4, lines 15-16; where the antenna with the "smallest reflected power" has the "highest power

strength"), and the transmission signal is transmitted in the non-directional pattern (column 3, lines 1-5, where "omnidirectional" antennas form non-directional patterns).

Regarding claims 3, 7, 15 and 19, Akaiwa in view of Kirisawa teaches all the limitations according to claims 2, 6, 14 and 18, respectively. In addition, Akaiwa teaches where when the detection means detects the reception error (figure 1, items 15 and 16; columns 3 and 4, lines 56-63 and 5-13, respectively). Kirisawa further teaches where the transmission control means controls the transmission means so that the non-directional pattern is formed using one of the plurality of antennas that has the largest antenna gain, and the transmission signal is transmitted in the non-directional pattern (column 3, lines 1-5 and lines 62-64; where the "largest antenna gain" is inherent in a "smaller reflected power". Column 3, lines 1-5, where "omnidirectional" antennas form non-directional patterns).

Regarding claims 4, 8, 16 and 20, Akaiwa in view of Kirisawa teaches all the limitations according to claims 2, 6, 14 and 18, respectively. Akaiwa further teaches where the communication terminal further includes selection means for measuring a quality of the reception signal for each of the plurality of antennas and selecting an antenna with the highest reception quality (column 1, line 58-64; e.g., "signal quality monitor circuit"), where when the detection means detects the reception error (figure 1, items 15 and 16; columns 3 and 4, lines 56-63 and 5-13, respectively). Kirisawa further teaches where the transmission control means controls the transmission means so that the non-directional pattern is formed using the antenna selected by the selection

means, and the transmission signal is transmitted in the non-directional pattern (column 3, lines 1-5, where "omnidirectional" antennas form non-directional patterns).

3.

4. Claims 9-12 and 21-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akaiwa in view of Kirisawa as applied to claims 1-4 above, and further in view of Keirinbou (Keirinbou, Hisashi; US Patent No.: 6,285,893 B1).

Regarding claim 9, Akaiwa in view of Kirisawa teaches of a mobile communication terminal for performing reception and transmission (figure 1) using an adaptive array method (column 4, lines 66-67 and column 5, lines 1-2), the mobile communication terminal being provided with (a) a plurality of antennas (figure 1, items 11 and 12 and column 4, lines 9-12), (b) reception means for forming a directivity pattern for receiving a desired reception signal from a base station and receiving the reception signal from the base station using the formed directivity pattern (column 1, lines 50-64), the program comprising: detection mean for detecting a reception error in the reception signal (figure 1, items 15 and 16; columns 1, 3 and 4, lines 43-63, 56-63 and 5-13, respectively). Kirisawa teaches of transmission means for transmitting a transmission signal using the directivity pattern formed in reception (column 1, lines 51-62); and transmission control means for controlling the transmission means when the detection means detects the reception error so that a pattern different from the directivity pattern formed in reception is formed and the transmission signal is transmitted in the formed pattern instead of the directivity pattern formed in reception (column 1, lines 60-62; where the transmitted signal is different from the received

pattern. See also, columns 2 and 3, lines 39-67 and 1-5, 47-64; where transmission directionality patterns of the antennas is selected depending on the reflected received signal and signal quality).

Akaiwa in view of Kirisawa does not teach of a program to be executed by a computer in a mobile communication terminal for performing the method described, the program being stored on a computer-readable recording medium.

In related art concerning a portable radio device equipped with a plurality of antennas, Keirinbou teaches of a program to be executed by a computer in a mobile communication terminal for performing the method described (column 4, lines 7- 11).

It would have been obvious to a one of ordinary skill in the art at the time the invention was made to combine Akaiwa's mobile communication terminal for performing reception using an adaptive array method and Kirisawa's transmission control means with Keirinbou's program in order to facilitate the operation of the method in a centralized unit and to provide the means to adapt the method to necessary changes, Keirinbou.

Regarding claim 21, Akaiwa in view of Kirisawa teaches of a mobile communication terminal for performing reception and transmission (figure 1) using an adaptive array method (column 4, lines 66-67 and column 5, lines 1-2), the mobile communication terminal being provided with a plurality of antennas (figure 1, items 11 and 12 and column 4, lines 9-12), a reception circuit which multiplies a signal received using each of the plurality of antennas by a weight vector (column 1, lines 50-55), and a transmission circuit which transmits the multiplied signal using each of the plurality of

antennas (column 3, lines 48-53, where it uses each of the antennas at different times depending on the selection made), reception means for forming a directivity pattern for receiving a desired reception signal from a base station and receiving the reception signal from the base station using the formed directivity pattern (column 1, lines 50-64), the program comprising: detection mean for detecting a reception error in the reception signal (figure 1, items 15 and 16; columns 1, 3 and 4, lines 43-63, 56-63 and 5-13, respectively). Kirisawa teaches of transmission means for transmitting a transmission signal using the directivity pattern formed in reception (column 1, lines 51-62); and transmission control means for controlling the transmission means when the detection means detects the reception error so that a pattern different from the directivity pattern formed in reception is formed and the transmission signal is transmitted in the formed pattern instead of the directivity pattern formed in reception (column 1, lines 60-62; where the transmitted signal is different from the received pattern. See also, columns 2 and 3, lines 39-67 and 1-5, 47-64; where transmission directionality patterns of the antennas is selected depending on the reflected received signal and signal quality).

Akaiwa in view of Kirisawa does not teach of a program to be executed by a computer in a mobile communication terminal for performing the method described, the program being stored on a computer-readable recording medium.

In related art concerning a portable radio device equipped with a plurality of antennas, Keirinbou teaches of a program to be executed by a computer in a mobile communication terminal for performing the method described (column 4, lines 7- 11).

It would have been obvious to a one of ordinary skill in the art at the time the invention was made to combine Akaiwa's mobile communication terminal for performing reception using an adaptive array method and Kirisawa's transmission control means with Keirinbou's program in order to facilitate the operation of the method in a centralized unit and to provide the means to adapt the method to necessary changes, Keirinbou.

Regarding claims 10 and 22, Akaiwa in view of Kirisawa and further in view of Keirinbou teaches all the limitations according to claims 9 and 21, respectively. In addition, Akaiwa teaches where when the detection means detects the reception error (figure 1, items 15 and 16; columns 3 and 4, lines 56-63 and 5-13, respectively). Kirisawa further teaches where the transmission control means controls the transmission means so that the non-directional pattern is formed using one of the plurality of antennas (column 4, lines 15-16; where the antenna with the "smallest reflected power" has the "highest power strength"), and the transmission signal is transmitted in the non-directional pattern (column 3, lines 1-5, where "omnidirectional" antennas form non-directional patterns).

Regarding claims 11 and 23, Akaiwa in view of Kirisawa and further in view of Keirinbou teaches all the limitations according to claims 10 and 22, respectively. In addition, Akaiwa teaches where when the detection means detects the reception error (figure 1, items 15 and 16; columns 3 and 4, lines 56-63 and 5-13, respectively). Kirisawa further teaches where the transmission control means controls the transmission means so that the non-directional pattern is formed using one of the

plurality of antennas that has the largest antenna gain, and the transmission signal is transmitted in the non-directional pattern (column 3, lines 1-5, where "omnidirectional" antennas form non-directional patterns).

Regarding claims 12 and 24, Akaiwa in view of Kirisawa and further in view of Keirinbou teaches all the limitations according to claims 10 and 22, respectively. Akaiwa further teaches where the communication terminal further includes selection means for measuring a quality of the reception signal for each of the plurality of antennas and selecting an antenna with the highest reception quality (column 1, line 58-64; e.g., "signal quality monitor circuit"), where when the detection means detects the reception error (figure 1, items 15 and 16; columns 3 and 4, lines 56-63 and 5-13, respectively), the transmission control means controls the transmission means so that the non-directional pattern is formed using the antenna selected by the selection means, and the transmission signal is transmitted in the non-directional pattern (column 1, lines 61-64; where the "corrected signal" corresponding to "directional" signal is outputted in response to quality and column 3, lines 1-5, where "omnidirectional" antennas form non-directional patterns).

5. Applicant's arguments with respect to claims 1-24 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

US Patent No.: 6,173,190 B1; deals with a signal receiving apparatus and method. It also, receives a directive pattern and transmits a non-directive pattern.

US Patent No.: 6,449,469 B1; deals with switched directional antenna for automotive radio receivers.

US Patent No.: 5,867,792; refers to a communication device with adaptive antenna.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Angelica Perez whose telephone number is 571-272-7885. The examiner can normally be reached on 7:00 a.m. - 3:30 p.m., Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nay Maung can be reached on (571)272-7882. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9314 for regular communications and for After Final communications.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either the PAIR or Public PAIR. Status information for unpublished applications is available through the Private PAIR only. For more information about the pair system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). Information regarding Patent Application Information Retrieval (PAIR) system can be found at 866-217-9197 (toll-free).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the TC 2600's customer service number is 703-306-0377.

Angelica Perez
(Examiner)

NAY MAUNG
SUPERVISORY PATENT EXAMINER

Art Unit 2684

May 18, 2005